

Polarity

In each of the following problems order the molecules from lowest to highest polarity:

- 1) PF_3 , LiOH , SF_2 , NF_3
- 2) $\text{Ni}(\text{OH})_3$, N_2H_2 , CH_3OH , $\text{C}_2\text{H}_5\text{OH}$
- 3) B_2F_4 , $\text{H}_2\text{C}_2\text{O}_4$, CuCl_2 , CF_2O
- 4) PH_3 , PF_3 , NH_3 , NF_3
- 5) H_2O , H_2S , HF , H_2

Types of Intermolecular Forces

What is the strongest intermolecular force present for each of the following compounds?

- 1) water _____
- 2) carbon tetrachloride _____
- 3) ammonia _____
- 4) carbon dioxide _____
- 5) phosphorus trichloride _____
- 6) nitrogen _____
- 7) ethane (C_2H_6) _____
- 8) acetone (CH_3COCH_3) _____
- 9) methanol (CH_3OH) _____
- 10) borane (BH_3) _____

Ranking Molecules by Increasing Polarity - Solutions

In each of the following problems, rank the molecules from lowest to highest polarity:

- 1) PF_3 , LiOH , SF_2 , NF_3
 $\text{NF}_3 < \text{PF}_3 < \text{SF}_2 < \text{LiOH}$
- 2) $\text{Ni}(\text{OH})_3$, N_2H_2 , CH_3OH , $\text{C}_2\text{H}_5\text{OH}$
 $\text{N}_2\text{H}_2 < \text{C}_2\text{H}_5\text{OH} < \text{CH}_3\text{OH} < \text{Ni}(\text{OH})_3$
- 3) B_2F_4 , $\text{H}_2\text{C}_2\text{O}_4$, CuCl_2 , CF_2O
 $\text{B}_2\text{F}_4 < \text{H}_2\text{C}_2\text{O}_4 < \text{CF}_2\text{O} < \text{CuCl}_2$
- 4) PH_3 , PF_3 , NH_3 , NF_3
 $\text{PH}_3 < \text{NH}_3 < \text{NF}_3 < \text{PF}_3$
- 5) H_2O , H_2S , HF , H_2
 $\text{H}_2 < \text{H}_2\text{S} < \text{H}_2\text{O} < \text{HF}$

Types of Intermolecular Forces - Solutions

What is the strongest intermolecular force present for each of the following compounds?

- | | |
|-------------------------------------------|--------------------------|
| 1) water | hydrogen bonding |
| 2) carbon tetrachloride | London dispersion forces |
| 3) ammonia | hydrogen bonding |
| 4) carbon dioxide | London dispersion forces |
| 5) phosphorus trichloride | dipole-dipole forces |
| 6) nitrogen | London dispersion forces |
| 7) ethane (C_2H_6) | London dispersion forces |
| 8) acetone (CH_3COCH_3) | dipole-dipole forces |
| 9) methanol (CH_3OH) | hydrogen bonding |
| 10) borane (BH_3) | dipole-dipole forces |